Recent Beach Progradation and High Resolution Ground Penetrating Radar Lines

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During the summer of 1998, three high resolution ground penetrating radar (GPR) profiles were collected in coordination with global position system (GPS) data. A line was run in each of 3 subcells located within the larger Columbia River Littoral Cell – Ocean Shores (North Grays Harbor), Warrenton (South Grays Harbor) and Long Beach. These profiles were shot using 200 MHz antennae with 0.5 m step to allow for detailed imaging (<0.5 m resolution) of the subsurface. The processed profiles were topographically corrected using the GPS data and at each location, a common mid-point survey was collected to calculate velocity of the subsurface material so that depth calculations could be made. The data was collected in areas that the geographic information systems database reveals constant progradation over the time period of available topographic information. Further processing and interpretation, will aid in understanding rate of recent progradation and possible anomalies.

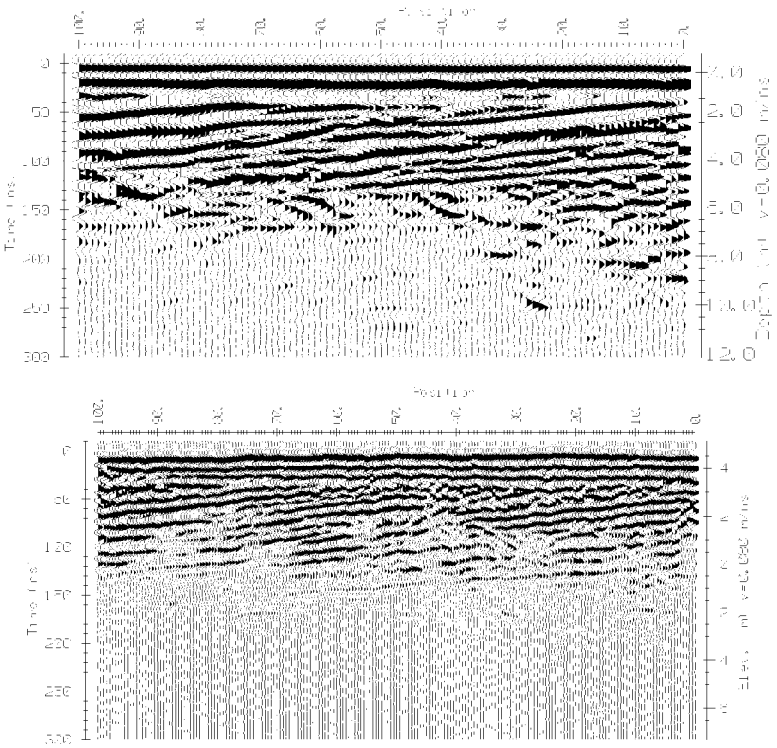

Figure 1 *Upper:* 100 MHz GPR profile (W-E) shot to show dipping foresets at Ocean Shores. *Lower:* 200 MHz GPR profile shot over same site showing higher resolution stratigraphy. The 1884 shoreline is locating at east end of the profile.

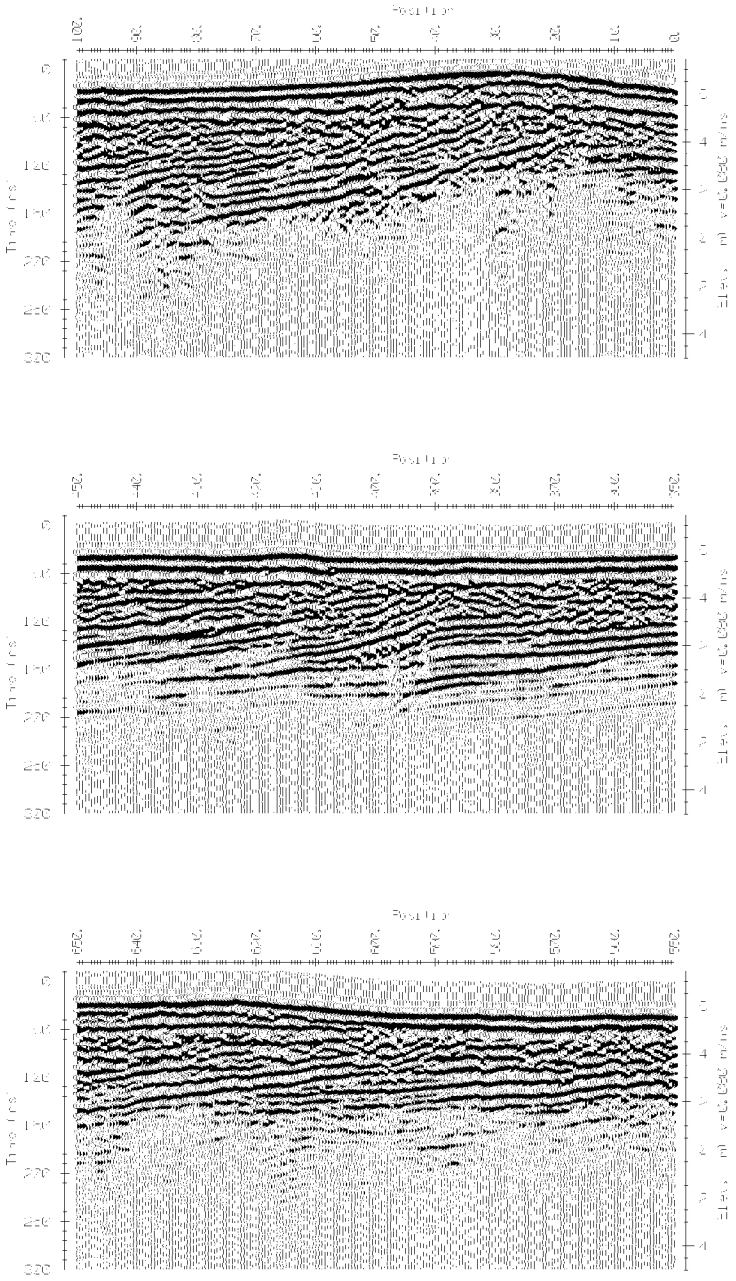

Figure 2 200 MHz GPR profile (W-E) shot in 1998 along Warrenton-Cannery Road in the South Grays Harbor Cell. *Upper:* 1200 yr BP scarp (placer) is located at 20-40 m, *Middle:* 300 Yr BP scarp (placer) is located at 385-400 m, *Lower:* Further west along the line is an erosional scarp located at 585 – 606 m. The feature is in front of the last known earthquatke event and could possibly be the 1886 El Nino event.

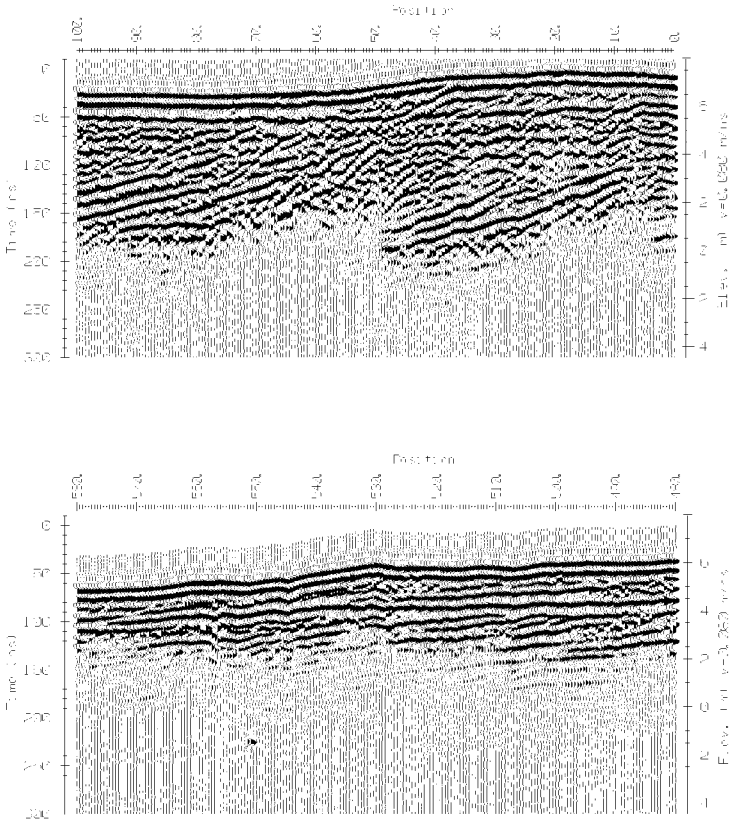

Figure 3 200 MHz GPR profile (W-E) shot in 1998 on the Long Beach Peninsula. *Upper:* 300 Yr BP scarp (placer) is located at 40 – 60 m. The 1873 shoreline is located at the same location. *Lower:* Further west along the line dunes are apparent in the topography as well as salt-water intrusion attenuates the radar signal. 1924 shoreline is located at approximately position 540.

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